REMARKS

By way of the present amendment, claims 1-2, 4-5, 7-8, 10-11, and 13-16 have been amended and claims 23-29 have been cancelled without prejudic. Applicant respectfully requests reconsideration in view of the following remarks.

Claim Rejections under 35 U.S.C. § 102

The examiner rejected claims under U.S.C. 102(e) as being anticipated by Grubb et al (6344925). Applicant respectfully traverses.

Claim 1 has been amended to recite a resonator formed from electro-optic material and having an adjustable refractive index induced tunable resonance wavelength,-and first and second waveguides optically coupled through evanescent wave coupling to the resonator along first and second coupling regions. Claim 1, as amended, is not anticipated by Grubb because Grubb fails to disclose a resonator having a tunable resonance wavelength due to resonance effects in which the refractive index is adjusted or tuned – i.e., the refractive index of the resonator is changed electrically to change the resonance condition of the resonator. In Grubb, by contrast, wavelength selectivity is provided by tunable WDM couplers 46_i and 46_0 and tunable reflectors 54_L and 54_H (see column 7, lines 45-49 and column 8, lines 22-34). To the extent that the CRR does have some resonance wavelength, it is only used to enhance the interaction between the pump light and the signal light, but has nothing to do with the wavelength selectivity of the CRR. In addition, Grubb's resonator is made of optical fiber or other Ramen gain medium instead of electro-optic material (see column 7, lines 41-49). Applicant respectfully submits that contrary to the Examiner's assertion, Grubb doesn't teach a CRR made of electro-optic material. The section of Grubb cited by the examiner, ie., col. 3, line

23-26 and col. 6, line 65—col.8 , line 48, makes no reference to the CRR being formed from electro-optic material.

Grubb also does not teach or suggest evanescent coupling. The coupling is accomplished with the WDM couplers. Because Grubb does not anticipate claim 1, claim 1 is patentable over Grubb.

Claim Rejections under 35 U.S.C. § 103

The examiner rejected claims under U.S.C. 103 as obvious over Grubb et al (6344925) in view of Ho (6009115). Applicant respectfully traverses.

Claim 1 is also not rendered obvious by the combined teachings of Grubb and Ho (6009115). Grubb discloses a cascaded Ramen resonator (CRR) comprising input and output WDM couplers 46_i and 46_0 and a fiber Ramen ring 48, made of optical fiber or other Ramen gain medium, interconnecting the WDM couplers 46_i and 46_0 (see FIG. 6 and column 7, lines 32-49 of Grubb). The fiber ring 48 provides Ramen gain and stoke wavelength shifting, which is essential for the function of a CRR. Ho discloses a semiconductor micro-resonator device 10 comprising a microcavity resonator 12 and a pair of waveguides 14 and 16 (see FIG. 1 and column 3, line 66 to column 4, line 1 of Ho).

Ho's microcavity resonator 12 differs from Grubb's fiber ring 48 in that Ho's microcavity resonator 12 is formed of semiconductor material instead of optical fiber or other Ramen gain medium (see column 4, lines 62-65). Because Ho's microcavity resonator 12 is semiconductor-based, one skilled in the art would not think to replace Grubb's fiber ring 48 with Ho's microcavity resonator 12 to come up with the tunable laser of claim 1. For one reason, semiconductors have much higher optical loss than Ramen gain fibers. As a result, Ho's microcavity resonator 12 would require a much higher pump power to realize the same Ramen

gain as Grubb's fiber ring 48. Another reason is that fiber rings in CCRs are typically required to be meters to kilometers in diameter in order to achieve enough Ramen gain. Realizing such a large diameter with a semiconductor-based resonator, such as Ho's microcavity resonator 12, is not feasible.

Further, in semiconductor material, Raman gain mostly occurs at specific well-defined frequencies because of their crystalline nature in which the molecular vibrational frequencies have very narrow bandwidth. Thus, even if one could make a CRR out of semiconductor materials, it won't be tunable because it can only provice Raman gain at a specific frequency. As a practical point, there is no CRR made out of semiconductor materials.

Because claim 1 is not rendered obvious by the combined teachings of Grubb and Ho, claim 1 is patentable over their combination.

Claims 2 through 22 all depend from claim 1 and are therefore patentable for at least the reasons given above for claim 1.

<u>Claim Rejections under 35 U.S.C. § 112</u>

In view of the amendments to the claims contained herein, Applicant submits that the claims meet the requirements for patentability under 35 U.S.C. § 102.

Conclusion

It is believed that the Application is now in condition for allowance and a favorable action is respectfully solicited.

Respectfully submitted,

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Dated: November 17, 2003

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